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HEALTH IN THE FACTORY

AN ACCOUNT OF THE
WORK OF THE MEDICAL
& DENTAL DEPARTMENTS
AND OF THE SICK
BENEFIT AND OTHER
SCHEMES IN OPERATION
AT BOURNVILLE WORKS

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HEALTH IN THE FACTORY.

THE BOURNVILLE SCHEME.

INTRODUCTION.

IN the later years of the war the question of the health of the industrial worker received closer attention probably than ever before. In the reconstruction period a deepened concern in the subject was widely manifested, and there has followed a stocktaking of opinion and experience, which may be the earnest of a new era in factory conditions, despite the present set-back to industrial prosperity.

So many enquiries have been addressed to us by individuals, firms and various journals, in regard to our medical and dental clinics, and the other measures adopted to maintain the workers' health, that we have decided to set them forth as simply and clearly as possible in the present pamphlet.

Two of the chief agencies at Bournville Works which operate in the interests of the health and physical well-being of the employees are the Medical and Dental Departments, which date back to early in the century, and to a description of these the pamphlet will be mainly devoted. There are also agencies which work in the interests of the employees and their dependants during and after sickness, such as the Sick Benefit Fund, Benevolent Fund, the activities of the Health Committees (appointed by the Men's and Women's Works Councils), and certain phases of the work of the Education Department; in addition to which other factors, such as the provision made for swimming, gymnastics, athletics and games generally, contribute largely to the maintenance of health, and the prevention (and to some extent the cure) of illness, and to these also some reference will be made.

The care for health at Bournville may be regarded from three aspects. From the point of view of the *public*, it ensures that the firm's product is pure and wholesome—a first essential in a food-producing factory. The *workers* are relieved of many anxieties attaching to the incidence of sickness in themselves and their families, to say nothing of their own bodily comfort and well-being. The *firm*—apart from any humanitarian considerations—obtains an efficiency and stability in its labour-force resulting from a healthy, contented worker, a minimum time-loss through ill-health, as well as the confidence of a sensitive public in its manufactures.

WORKING CONDITIONS.

First of all, it is necessary to consider the conditions under which the work is carried on, and note some of the provisions at Bournville which make for a high standard of health, and which create *esprit de corps*, a spirit of loyalty to fellow employee and to employer, of pride and interest in work and firm.

There is, for instance, the encouragement given to athletics of every kind, both on the men's and women's sides, in which many hundreds participate every week, not as spectators, but as actual players; there are the facilities for physical culture—gymnastics, swimming, dancing; and there is the opportunity for the expression of individuality through music and drama, and various hobbies, such as photography, gardening,* etc.

ENVIRONMENT.

The firm recognises the mental and moral effect of the environment of the worker, and has always endeavoured to carry out any proposals which tend to create a healthy, pleasant atmosphere, and make "the Works" as attractive as possible to the worker. The erection of the factory in a country district outside the large town;† the preservation as

* There are 100 acres of ground devoted to athletics and recreation in connection with the Works, including over 450 allotment gardens.

† Cadbury Bros. moved their factory from Bridge Street (in the heart of Birmingham) to Bournville in 1879. Bournville Village was commenced in the same year, though the greater part of the building dates from 1895. In 1901 Mr. George Cadbury handed over the whole property to a body of Trustees on behalf of the nation. The vital statistics are of importance:—

Death Rate per 1,000. Average for 5 years ending 1919.

Bournville 7·7 Birmingham 13·7 England and Wales 14·9

Infantile Mortality per 1,000 live births. Average for 5 years ending 1919.

Bournville 51 Birmingham 101 England and Wales 97

Comparison of Bournville children with those in poor City area.

Age (years)	BOYS				BOYS			
	Weight (lbs.)				Height (inches)			
	6	8	10	12	6	8	10	12
Bournville	45·0	52·9	61·6	71·8	44·1	48·3	51·9	54·8
Floodgate St., } Birmingham }	39·0	47·8	56·1	63·2	41·9	46·2	49·6	52·3
	GIRLS				GIRLS			
	6	8	10	12	6	8	10	12
Bournville	43·5	50·3	62·1	74·7	44·2	48·6	52·1	56·0
Floodgate St., } Birmingham }	39·4	45·6	53·9	65·7	41·7	44·8	48·1	53·1

far as possible of any natural features which make for beauty both inside the factory bounds and in its surroundings ; such comparatively minor points as the hiding of bare brick wall by climbing plants, the use of decorative flowers and plants in dining and workrooms, the encouragement given to organised singing at work—all these and other provisions, in their elevating and refining effect on mind and spirit, inevitably react favourably on physical health.

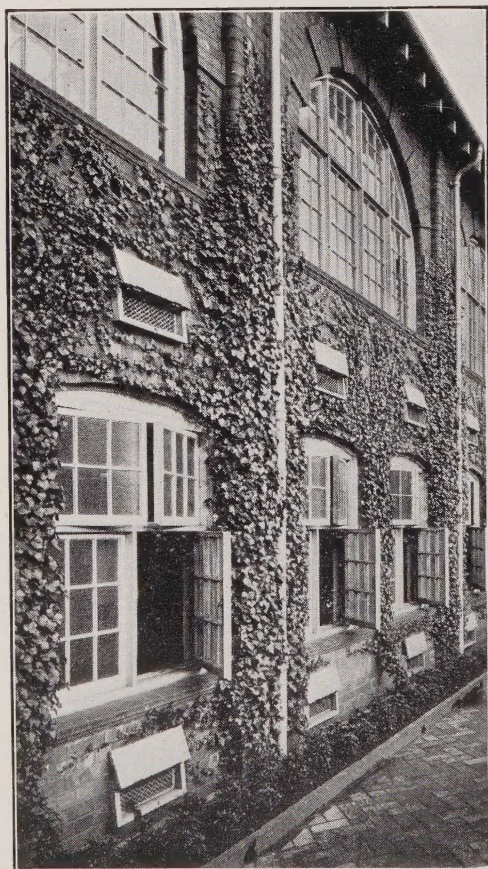
BUILDINGS AND WORKROOMS.

The factory buildings themselves are designed to meet every requirement in the way of lighting, heating and ventilation ; and as additional buildings are erected or new buildings substituted for old (as is continually going on) they embody the very latest hygienic practice.

It may also be noted that the blocks of buildings are separated from each other by streets, which, besides enabling the rooms to obtain a maximum of light and air, also minimise the danger in case of fire.

The factory is lit by electricity when artificial lighting is needed, particular attention being paid to the arrangement of the lamps.

Ventilation is carried out as far as possible by natural methods, *e.g.*, open windows or ventilators, but in some cases where this is not practicable, ventilating shafts are introduced with either extracting or propelling fans. Every care is taken to secure continuous changes of air and to avoid draughts, and a large



EXTERIOR OF A
FACTORY BUILDING.

Note the creeper covering the wall ; the open windows ; and the hinged lids covering the air-gratings.

portion of the factory is heated and ventilated by air drawn into the rooms over hot pipes.

Mr. George Cadbury himself introduced forty years ago a device for ventilating workrooms, by which fresh air comes in through gratings in the wall and is compelled by sheet-iron baffle plates to travel along the hot-water pipes and become warmed before entering the room. On the outside of the wall are hinged lids for regulating the air supply.

The various rooms in the factory are periodically sprayed with an odourless disinfectant.

The factory is surrounded by beautiful grounds—notably the Men's and Girls' Recreation Grounds, with tree-shaded lawns, flower-beds, swimming pools, lily ponds, etc., and among the factory buildings themselves lawns with trees and flowers are introduced where possible.

There are dressing rooms, with facilities for drying wet clothes, and over-shoes are supplied at low rates during particularly wet or snowy weather. Both girls and men are required to wear overalls, mostly of white holland (this also applies to girls in offices), and, in some departments, caps completely to cover the hair. There is adequate lavatory and sanitary accommodation, and facilities are provided for hot-baths, shower-baths, etc., during and after working hours. There is sufficient accommodation to provide every woman employee with a weekly bath. "Bubble" fountains are put up in various parts of the factory where employees may quench their thirst. These fountains, in which the water rises clear of the apparatus, are considered much more sanitary than the common drinking-cup. Among other provisions, the introduction of a rest-pause, with the opportunity to obtain refreshment, may be noted.

Dining rooms, light, airy and cheerful, are provided for all. There are well-equipped kitchens, with competent staffs, for the preparation of meals, which are supplied at the lowest figure commensurate with efficiency. Every endeavour is made to avoid anything in the nature of an "institutional atmosphere" about meals in a Bournville dining-room. Workers may bring their own food if preferred; "hot-cupboards" are provided for warming up such food as meal-times approach. Clerical and technical workers may use the Clerks' Dining Room if desired. This is run on restaurant lines, with a staff of waitresses.

HOURS.

The hours worked in the factory are normally 44 per week, made up as follows :—Monday to Friday, 7.45 a.m. to 12.30 p.m., 1.30 p.m. to 5.0 p.m.; Saturday 7.45 a.m. to 11.45 a.m. This gives a total of $45\frac{1}{4}$ hours, but on every fourth Friday work ceases at 4 p.m., and the following day—Saturday—is a whole holiday, thus adjusting the difference. The clerical and administrative staffs commence work at 8.30 a.m. and finish at 5 p.m. (12 noon on Saturdays). They are allowed $1\frac{1}{4}$ hours for dinner, and have one whole Saturday off in four.

All employees are granted a holiday (with pay) in the summer of about 10 days, deductions being made for bad time keeping, and bonus days added according to length of service.

The total number of employees at this date (May, 1922) is 5,148 men and boys and 4,275 women and girls,* of whom 4,349 men and boys and 4,194 women and girls are actually at Bournville.

A certain amount of night-work has to be performed owing to the exigencies of the trade and the nature of the materials, but as the factory is extended to cope with requirements during the day-time, this is reduced. Night-working departments are staffed by special groups of men, who receive extra payment.

It has been considered advisable to enter a little into these details because of their undoubted bearing on the health of the factory and the work of the Medical Department.

The doctors are available for consultation and advice in all matters affecting working conditions, and they make periodical examination† of all rooms—working, dining, dressing, etc.—but their chief duty lies in dealing with the personnel, the treatment of individual illness and accident, and the examination of applicants for work with a view to preventing unsuitable persons from being employed, and to ensure that those engaged are not employed on work for which they are not

* Many important subsidiary industries are carried on at Bournville in addition to the actual manufacture of cocoa and chocolate, *e.g.*, tin, wood and card-box making, printing, together with engineering and building departments for the maintenance and erection of buildings, etc., etc., and until recently saw-milling and tin-stamping also, but these processes have been removed to a subsidiary factory.

† The Works Chemist (who is attached to the manufacturing departments) assists the works doctors by carrying out tests for dust, CO_2 , etc.

physically suitable. It is scarcely necessary to state that the sick worker in industry is a weight carried by his fellows. Such persons are expensive and unsatisfactory employees, causing dislocation of staffs through frequent time-loss, and heavy labour turnover, besides materially affecting the quality and quantity of output. Even on the score of mere efficiency, the appointment of a permanent full-time Medical Officer is a necessity to the economic running of a factory where the labour-force is large, and especially where there is a considerable number of women and girls.

THE MEDICAL DEPARTMENT.

STAFF AND ACCOMMODATION.

The Medical Staff consists of two full-time qualified doctors—one a lady—responsible respectively for the men's and women's sides of the factory (the sexes are about equally divided in number), and there are four qualified nurses attached directly to the surgery, three of whom are qualified masseuses.

There is a fully-equipped surgery (with necessary waiting rooms, dispensary, etc.), open throughout working hours, and there are also retiring rooms to which girls in temporary need of rest during working hours can go. Ambulance and first-aid treatment are dealt with later in this pamphlet under the heading of Accidents. There is an up-to-date



BOURNVILLE WORKS MEDICAL STAFF.

Left to right:—(standing)
Nurses J. L. McLardy, F. Simpson,
A. J. Robertson, A. I. Morris.

(Seated)
Miss M. G. Sheldon, M.B., Ch.B. (Liverpool),
E. E. Mather, M.A., M.B., B.Ch. (Oxon.).

installation for massage and electrical treatment. The firm also maintains a convalescent home for girls at Bromyard, Herefordshire, and one for men at Harlech, North Wales (see page 19).

APPLICANTS FOR EMPLOYMENT.

As has already been stated, the relations of the Medical Department with the worker begin with his or her first appearance at the Lodge Gate as an applicant for employment—be it as a learner, a labourer, or as a candidate for one of the higher posts.

The form to be filled up by an applicant for employment contains various questions referring to previous health and the portion “to be filled up by the Doctor” indicates the scope of the examination :—

Height; Weight; Eyesight; Hearing; Teeth; Heart; Lungs; General Appearance; Skin and other defective conditions; Wounds or Injuries; Present physical condition: Is the applicant a fit person to be taken into our employ? if unfit for general work, what nature of employment is suggested?

With regard to junior applicants, where a boy or girl is under-developed or under weight, the doctor may refuse to recommend engagement, but suggest re-application after a stated period, making recommendations as to diet, exercise, treatment, etc., meanwhile. Or, he may recommend employment, qualifying his certificate with suggestions as to the kind of work for which the applicant is unsuited (*e.g.*, lifting weights),* and may also indicate certain special measures to be taken, such as a course in the Remedial Gymnasium†

* Boys are only allowed to move or carry certain weights according to their age—a scale being established for the purpose. This is a very necessary measure, especially where growing boys on piecework are concerned.

The following is an extract from the Instructions to Foremen:—

“WEIGHT LIFTING.—When weights have to be systematically lifted or carried it is found that anything in excess of the following is liable to cause injury :—

Boys under 15	...	17 to 18 lbs.
Youths under 17	...	24 to 30 lbs.
Men under 20	...	30 to 38 lbs.

For weights in excess of above, specially selected men must be appointed.

When anyone is lifting a heavy weight, advise them to keep the legs close together, as the strain on the body is then considerably reduced.”

† Physical exercises form part of the four-year curriculum of the Day Continuation School through which all junior employees pass.

coupled with periodical re-examinations. These cases generally turn out well.

TRAINING DEPARTMENT.

New girls, and girls beginning new operations pass through a Training Department in order that the best method of work may be acquired. Inefficient and slow workers are also sent to the Training Department (see page 16). Among the other results obtained, avoidable fatigue is eliminated.

The method of dealing with defects of the teeth in applicants for employment is indicated later in this pamphlet, where the work of the Dental Department is described.

SICKNESS.

A sudden case of illness is seen by a Works Doctor, who gives whatever immediate treatment may be necessary, and advice as to the course to be followed. Should the case require continued medical attention after the patient has been removed to his or her home, it will of course (if the patient be of insurable age) come under the panel or other private doctor. If, however the patient be under 16, and so outside the scope of the National Health Insurance Act, and resides within two miles of the works, the Works Doctor may take the case throughout. No charge is made for attendance, but medicine is supplied at a nominal figure. This, of course, applies also in the case of a patient able to visit the Works Surgery at the necessary intervals.

All cases of illness treated at home (whether by the Works or private doctor) are seen periodically by one of the nurses, provided the patient resides within a radius of three miles. The nurses take charge of districts, and the advice and treatment they give is very similar to that given by the ordinary District Nurse. The Doctor will see any case if special circumstances make it necessary or desirable. In fact, a broad view is taken of the work at the Surgery and in the patients' homes, and the Medical Department is always willing to render assistance in cases which lie outside the strict limits laid down.

In addition to advice, treatment and medicine, the Works Doctor may authorise the supply (gratis) from the Works Dispensary of extra nourishment, in the form of invalid food, etc. A bath-chair is also available for loan in suitable cases, together with air-cushions, etc.



A BOURNVILLE WORKROOM.

During the year 1920, 34,324 visits were paid to the Surgery, compared with 26,928 in 1919 and 22,609 in 1918.* 198 patients were visited in their homes by the Doctors during that period, 6,920 by the nurses, and 38 visited by the nurses in hospital. The majority of the ailments treated were, naturally, slight, but among them were cases of pneumonia, rheumatism, influenza, etc. Fifteen employees died during the year, against 20 in 1919 and 25 in 1918. In addition to cases of illness, the following figures relative to the work of the Medical Staff may be of interest:—

			1st Qr. 1921	2nd Qr. 1921	3rd Qr. 1921
		1920	1921	1921	1921
Minor Operations	...	3	6	5	3
† Wounds—Dressings	...	12,317	2,582	1,043	2,106
Abscesses	...	316	56	73	64
Burns, Scalds	...	75	19	14	7
Works Accidents	...	1,599	436	360	286
Outside Accidents	...	662	146	189	175
Massage & Electrical Patients	...	140	26	16	23
Do. Do. Appointments	...	1,846	303	225	281
Strains and Sprains	...	121	36	49	48
Casuals	...	2,684	780	726	502

* During the absence of one of the Doctors on War Service it was not possible to attend to all minor cases of illness. There has also been a considerable increase in the number of workers since this date.

† This includes minor injuries, to which immediate surgical attention is given, in order to avoid suppuration and possible subsequent complications.

ACCIDENTS.

In such a factory as Bournville (as compared, for instance, with an engineering works employing the same number of workers) serious accidents are a rarity. The following are the figures for 1919-1921, which show the number of accidents treated at the Surgery:—

				Men.			Women.		
				1919	1920	1921	1919	1920	1921
Severe	...	...		23	15	5*	4	2	4
Mod. Severe	...	...		84	24	9	14	17	8
Slight	...	...		895	1,428	1,064	254	569	412

Those treated by members of the Works Ambulance (referred to below) numbered—

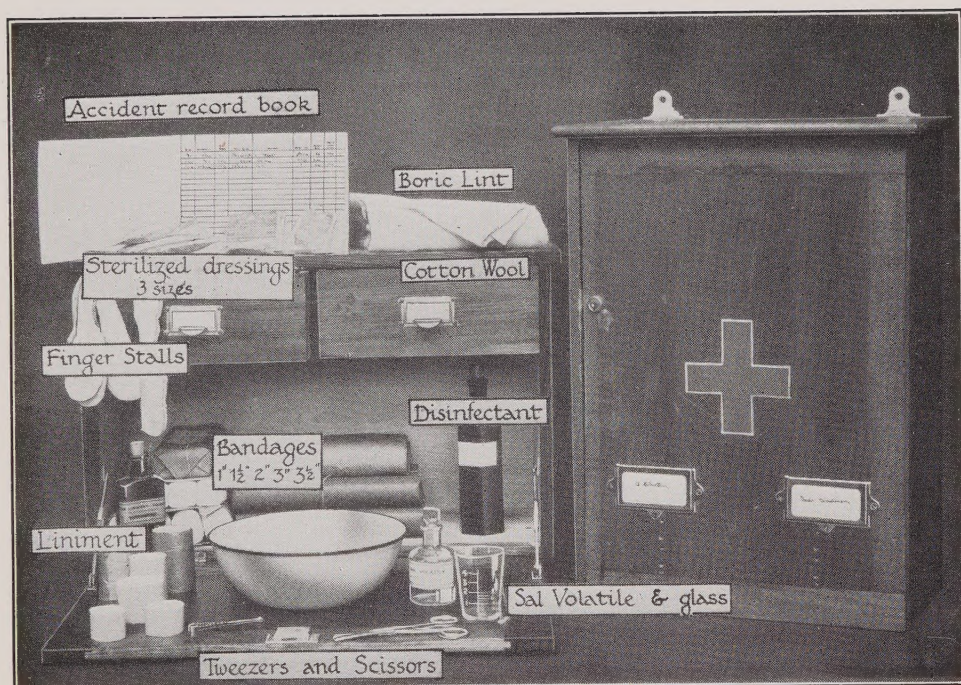
		Men.	Women.
1919	...	4,811	6,869
1920	...	8,144	4,930
1921	...	9,188	5,248

These were very slight accidents treated in the shops from the first-aid boxes placed therein, only a small percentage of which were serious enough to warrant sending to the Surgery for further treatment.

Instructions are given that every accident, *however slight*, shall be *immediately* reported, and prompt attention given. This stringency is reflected in the figures—the apparently great increase in the number of minor accidents being an index of the number *reported*, and the effect being to decrease substantially the number of more severe cases, which in practice it has been found are often the result of the neglect of an apparently trivial hurt. If this precaution is not taken the employee forfeits the Company's Supplementary Gift—see page 12.

The majority of workrooms and offices are fitted with one or more ambulance boxes in the definite charge of one or two members of the Works Ambulance (who possess St. John Ambulance Certificates) employed in that particular room. Another member of the ambulance is responsible for keeping all the boxes filled with the necessary bandages, dressings, etc. The boxes are labelled with the names of the workpeople responsible for the administration of first-aid. From them immediate treatment of cuts, scratches, bruises, etc., is given

* In addition there was one fatal accident—the only one which has taken place in the Works during the past 14 years.



AMBULANCE BOXES PLACED IN WORKROOMS.

The open box shows a type in which the front opens to form a shelf.

and if necessary the cases are passed on to the Doctor; in some instances ambulance box-holders are allowed to give a second dressing. If the patient is sent to the Surgery, and he or she is able to attend as often as is necessary while incapacitated from work, the case is treated throughout by the Works Doctor. Otherwise the same course is followed as for ordinary sickness. Hand and motor ambulances are provided for the removal of serious cases to hospital or home as the case may require.

Workers are often reluctant to have treatment for slight injuries, and the Medical Department and the Accidents Committee have been very concerned with the number of such cases in which suppuration has taken place, resulting in more or less serious trouble with consequent loss of time. The Works Councils* have had this matter in hand, and have exercised considerable influence in inducing workers to undergo immediate treatment. The latter are, however, often unwilling to lose a little time, despite the danger of losing much more time later on.

The Works Doctors are co-opted members of the Accidents Committee of the Works Council, which investigates

* See Appendix, page 31.

all accidents (generally meeting at the place where the mishap occurred), apportions blame, if any, and takes any necessary steps to prevent a recurrence. It decides also whether or not compensation shall be paid. The firm makes a supplementary payment over and above any compensation due under the Workmen's Compensation Act sufficient to bring the total amount received up to 90 per cent of the employee's average wage; but the 90 per cent is not to exceed:—

In the case of a man over 21 by more than 7/6 per week
„ „ „ woman „ 18 „ „ 5/- „

the standard rate of wages laid down in the Cocoa and Chocolate Trades Agreement. Junior employees receive a payment in proportion. (See also page 26). Accidents due to carelessness or neglect of rules (including failure to notify an accident immediately) render the employee liable to be deprived of this supplementary gift.

An expert is retained by the firm, whose duty it is to see to the effective safeguarding of machinery and plant. A great many of the machines at Bournville are fitted with "safety devices" greatly in excess of the Home Office requirements. Furthermore, records are kept of *all* accidents,



SAFETY DEVICE ON WOOD BOX HINGEING MACHINE. The machine will not operate until the button (marked by arrow) is touched by the box. The worker's hand is then out of danger.



AN AMBULANCE CLASS.

A Demonstration by the Doctor in First Aid.

ing personal injury or not, such as the bursting of revolving wheels, etc.

It may be mentioned that the Firm does not insure in respect of Workmen's Compensation ; the cost to them per £100 wages works out as given below—including legal compensation, supplementary gift, and sums paid to employees who have suffered permanent injury (weekly allowance according to registered agreement), and lump sums paid in commutation. It is also to be noted that compensation is paid to an injured worker in many cases where no legal claim could be made, and further, that payment commences with the first day of absence, as advantage is not taken of the clause in the Act which gives permission to refuse payment in respect of the first week's illness where the total period does not exceed two weeks.

TOTAL COST OF ACCIDENTS PER £100 WAGES.

			1918	1919	1920	1921
Men	...	...	5/11 $\frac{1}{4}$	5/3 $\frac{1}{2}$	4/5 $\frac{3}{4}$	3/10 $\frac{1}{2}$
Women	...	...	1/4 $\frac{3}{8}$	1/2 $\frac{7}{8}$	1/3	1/2 $\frac{1}{4}$

* This fact should be borne in mind when comparing the statistics with those of other works.

AMBULANCE CLASSES.

Ambulance Classes are held during the winter months, at which the Works Doctors lecture and give instruction in first-aid, etc. Many employees hold the various medals and diplomas of the St. John Ambulance Association, and members of these classes form the Works Ambulance Corps.

INFECTIOUS DISEASES.

Naturally, at a factory making food-stuff, the rules governing Infectious Diseases which affect employees, their families or persons with whom they reside, are very strict. No employee is allowed to come to work knowing there is infectious disease at home (except under certain stringent conditions), and must notify the Works Doctor. Any infringement of this rule renders the employee liable to instant dismissal. A junior employee must also absent himself or herself from the Day Continuation School and notify the headmaster or mistress.

When any infectious diseases occur at the home or lodgings of an employee he or she must not pass the Check Lodges without the written permission of the Works Doctor, nor return to work for, in the case of scarlet fever, diphtheria and membranous croup, 8 days; mumps, 21 days; other infectious disease, 14 days, and until certified by a medical man to be free from "infection" (such certificate to be countersigned by the Works Doctor).

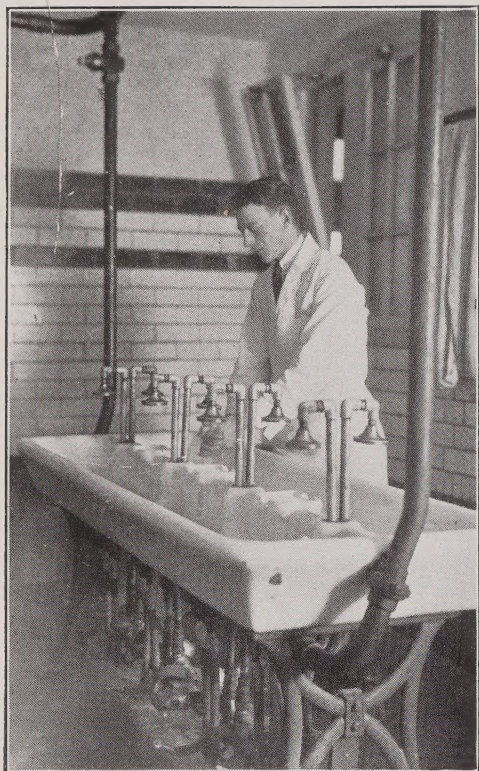
All employees under 21 years of age who have not had measles and who work on food-stuffs are required to remain at home for 14 days if there is a case of measles in the house, or 21 days in the case of mumps.

In certain cases of Infectious Diseases at the home or lodgings of an employee, where the employee is not actually engaged in the handling or manufacture of food, the Works Doctor may, in his discretion, grant exemption from these regulations.

Employees affected by the above regulations desiring to visit the Surgery must not enter the Works, but must apply at the Surgery side door.

A weekly payment is made by the firm to the employee in respect of absence under these regulations.

If any infectious case is being treated at home, employees must at once go into lodgings or reside elsewhere, subject to the discretion of the Works Doctor, until the house is certified free from infection, either by the Public Health Authorities or by the doctor in attendance. He or she must not enter or receive a visit from a house in which an infectious case is



LAVATORY ARRANGEMENT.

The rose-jet is operated by the foot so that none of the fittings is touched by the hands. The outflow of water is unhindered by plugs, and the greatest possible cleanliness is ensured.

must not necessarily be confined to any set period, but must be continued so long as there is a reasonable chance of recovery. Arrangements are therefore made by which, if the Doctor is satisfied that there is a reasonable chance of recovery and that the patient is one who will strictly adhere to the regimen laid down, he or she may go to a sanatorium for any necessary period, such case being dealt with by the Benevolent Sub-Committee.

A number of open-air sleeping shelters are available also for home treatment.

Very few cases, however, occur at Bournville.

AFTER-CARE.

When an employee returns to work after illness it is frequently found advisable to continue some form of treatment or care. Should this be the case, the Works Doctor will

being nursed during that time. Should this rule not be complied with, no payment whatever is made.

In the case of Infectious Disease at home employees must immediately declare their intention of accepting the firm's special grant and of not seeking employment elsewhere, or of refusing the grant, leaving themselves open to obtain employment during the period of enforced absence under these rules.

TUBERCULOSIS.

Particulars of the symptoms of tuberculosis are circulated, and every encouragement is given to employees who suspect its presence to visit the Works Doctors for examination and advice. Emphasis is laid on the necessity for early treatment if a cure is to be effected, and it is recognised also that such treatment

notify the employee's foreman or forewoman of the measures to be taken. Thus, a girl may be allowed to enter a few minutes later and leave a few minutes before the others in order to avoid the ill-effects of "rushing," which is unavoidable when a crowd of people leave a work or dressing room together. Tickets are also given entitling employees to hot milk or other food at the Works Kitchen between the regular meal-hours, and any similar consideration which can be shewn to an employee is recommended by the Works Doctor and carried into effect.

INEFFICIENT AND SLOW WORKERS.

When a worker on piece-rates fails to earn the recognised minimum for the class of work one of three conditions is the cause. Either the worker is temperamentally unsuited for the job, or something is wrong with her health (we deal here particularly with women workers, who are nearly all on piece-rates), or her method of work is such as unduly to fatigue her. Occasionally one finds a girl who is not dependent on her earnings, and thinks she can sometimes afford to "take things easily," but such cases are exceptions. "The simplest plan," says Mr. Edward Cadbury in his book, *Experiments in Industrial Organisation*, "from the employer's point of view of dealing with the inefficient would be to discharge them, but this method does not appeal to the employer who realises his responsibility to the workers, and who also understands the dire effect that the workers' dismissal may have on their future career."

Recognising, therefore, that the cause of inefficiency is often something outside the employee's control, careful individual attention is given to girls below the standard of the average worker. The forewoman having satisfied herself that it is not merely a question of discipline consults the Head Forewoman. If health seems to be the cause, the girl is examined by the Doctor, suitable measures are taken, and she is required to follow implicitly the Doctor's instructions. Sometimes the case may require 3 or 4 weeks of rest at the Convalescent Home, possibly massage, or a supply of cod-liver oil or similar food. Bad habits, *e.g.*, late hours, coming to work without breakfast, may be at the root of inefficiency, or insufficient nourishment (the result of poverty or mismanagement at home). Cases have also been discovered where a girl has to contribute beyond her means (even to the extent of her whole wages) to the upkeep of the

family. Or there may be other home circumstances whose effect is more mental than physical, which interfere with a girl's capacity as a wage-earner. Such conditions may often be brought to light by a sympathetic doctor where another inquiry would fail.

Physical debility, however, is in the majority of cases found to be the cause of inefficiency, and where actual medical treatment is not required the need can often be met by a grant of free meals, etc.

Where a girl, for physical or temperamental reasons, is discovered to be unfit for the work on which she is engaged, arrangements for transfer to other work may be made. Often industrious girls, who are failures at heavy work, on being transferred to lighter duties develop into useful and efficient workers.

Such comparatively trivial causes of inefficiency as the height of the worker's stool or chair, uncomfortable lodgings, living at too great distance from work, may also be brought to light by judicious investigation and enquiry.

If faulty methods are found to be the cause of fatigue and inefficiency the girl is sent to the Training Department (see page 8).

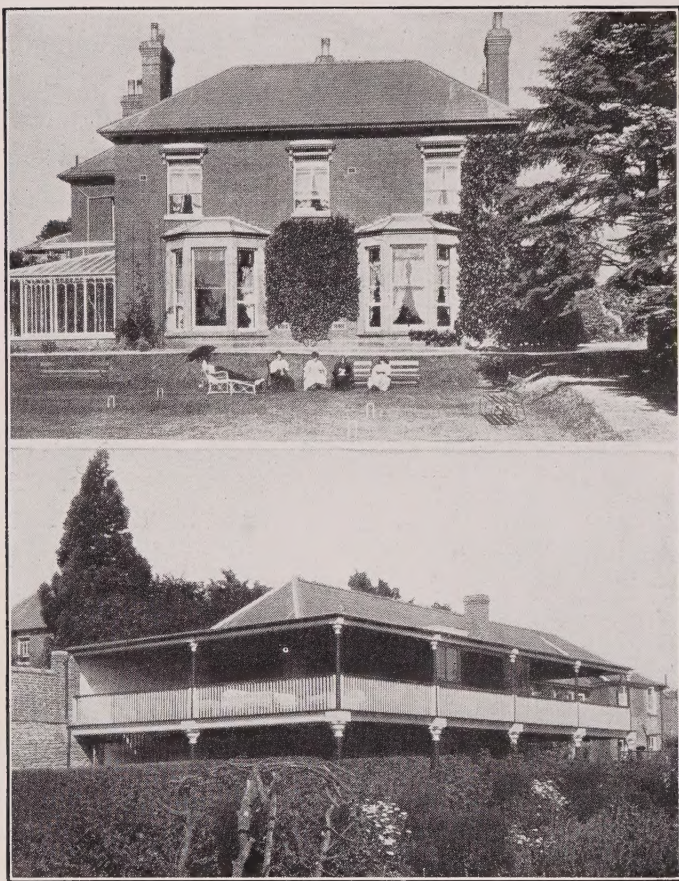
Disciplinary measures for dealing with cases outside the above do not come within the scope of this pamphlet, but it will be gathered that dismissal is only resorted to after all other steps have been taken, and failed.

"It is," to quote Mr. Edward Cadbury again, "an instructive and hopeful fact of wide social and economic significance that such a large number of the cases of inefficient workers can be raised to a standard of efficiency by such simple precautions and remedial measures as above described."

HOSPITAL AND NURSING HOME TREATMENT.

Employees and their wives becoming in-patients at a Hospital (in a public ward) are maintained by the firm. A quarterly account is rendered, based on the average cost per patient per day for the previous year.

The firm pays 8s. 0d. per day towards the maintenance of employees or their wives admitted to Nursing Homes. An allowance is also made if they are admitted to the Private Ward of a Hospital, the amount being authorised by the Benevolent Sub-Committee.



CONVALESCENT HOME FOR GIRLS
AT BROMYARD, HEREFORDSHIRE.

The lower photograph shows beds in the
open-air loggia.

The firm and employees subscribe* to the Birmingham Hospital Saturday Fund, which grants Hospital Notes entitling to out-patient treatment. Treatment is also given at certain Convalescent Homes, etc. Among such homes are St. Ann's Orchard, Malvern (women), Highfield, Droitwich (for treatment of rheumatism—men and women), Tyn-y-Coed, Llanrhos (men), Marle Hall, Llandudno (women).

Among other activities of the

Bournville workers' delegates to the Saturday Fund are the making of appointments with specialists at reduced fees, and the issue of orders for supply of trusses, elastic stockings, and other surgical appliances at lowest possible prices—in some cases arrangements being made for payment in instalments.

In addition, as already mentioned, the firm maintains a Convalescent Home for girls at Bromyard, Herefordshire, and one for men, at Harlech, North Wales. This is used not only for those recovering from illness, but also to give a change of air and a rest to those threatened with breakdown.

With the approach of the annual Summer Holiday (when the Works are closed) Forewomen make inquiries in their

* An amount equal to one half-penny in the shilling on the week's wage is deducted half-yearly from all those whose wages exceed 6/- during the week previous to collection, and who have been employed by the firm before the previous January or July; a sum equal to half the amount thus collected is added by the firm.

departments with a view to discovering those whose health requires a change of air, but whose circumstances do not permit of advantage being taken of the opportunity afforded by the holiday. Some of these girls are then assisted to spend a few days at Bromyard.

The Froome Bank (Bromyard) Home is under the control of the Medical Department. It is in charge of a Matron, assisted by a nurse and household staff. There are twenty beds, and suitable cases occupy those in the open-air loggia. Phthisical cases are not admitted.

"Hafod Wen" (Harlech) has accommodation for 12 men.



"HAFOD WEN," HARLECH,
NORTH WALES.

Acquired in 1922 as a Holiday and
Convalescent Home for Men.

THE DENTAL DEPARTMENT.

STAFF AND ACCOMMODATION.

The firm employs three whole-time fully-qualified dentists, together with two mechanics and four attendants.

The accommodation both for the Medical and Dental Staffs is situated just outside the factory proper, but is connected therewith by a covered bridge. The Dentists' rooms face north, and have large windows admitting the maximum amount of steady light. They are well furnished with all up-to-date requirements. The abundant light and scrupulous cleanliness are the first two items which strike and are commented upon by a visitor.

Besides the attention to general cleanliness of the rooms great care is exercised to prevent small particles of filling or dressing materials, etc., becoming lodged in folds of the patients' clothing. For this purpose an apron, similar to that used by a hairdresser, is placed over every dental patient before any operation is commenced.

TREATMENT.

All applicants for work are also examined by one of the Works Dentists, as part of the preliminary medical examination, and a record is kept of the oral conditions of all under 16. Apart from affections of the teeth themselves, which are thus discovered and treated as hereafter described, such (and subsequent) examinations often bring to light other conditions which may otherwise escape notice, or which would not come before the Works Doctor until sufficiently advanced to cause actual illness. There is intimate co-operation between the two departments, and cases of enlarged cervical glands, the initial stages of anæmia, goitre, chest complaints, etc., are constantly referred by the Dentists to the Medical Department. On the other hand neuralgia and abscesses of dental origin frequently come under the notice of the Medical Staff first.

Should the teeth of an applicant be very bad he (or she) is rejected, but is usually advised to go to the Dental Hospital, Public Dental Service, or a qualified practitioner, to have the mouth put in order, when a fresh application for employment may be made.

Employees treated by the Works Dental Department are divided into two classes—"compulsory" and "casual." It is a condition of employment that all who enter the works under 18 years of age (formerly 16) shall have what dental treatment is considered necessary by the dentists. These are called, for want of a better word, "compulsory patients." All employees may consult the dentists and have extractions or simple dressings for the relief of toothache. These are "casual patients," and to such an extent has this work grown that it occupies nearly half the time of the dental staff.

Up to the end of 1921 girl compulsory patients were given complete treatment during the whole period of their continuous employment, but if they left and came back further complete treatment was forfeited. Treatment for boys ceased at 21 years of age.

With the advent of free Dental treatment allowed by Approved Societies under the National Health Insurance

Scheme, it was felt that to treat patients completely after 18 years of age was to encroach on the Panel Dentist's domain, and as it appeared that State Dental Service was now definitely on the way it was felt that it would serve the community better if the dentists confined their attention to those under 18, and give such emergency treatment to the older employees as was needed.

A return will probably be made to periodic examination and treatment of young people (see page 22).

All candidates for apprenticeships are examined, and marks awarded for the way in which the mouth is kept.

Should a denture be necessary (it is only resorted to in the last extremity) a small charge is made to cover material and the mechanic's time. Otherwise all "compulsory" treatment is free.

Treatment also falls into two classes :—

- (1) Complete, *i.e.*, that a patient's mouth is put and maintained in good order by extractions, fillings, etc., and in some few cases, dentures.
- (2) Partial, *i.e.*, work done to relieve toothache or to tide the patient over till such time as he or she can be sent for for the complete treatment to be carried out.

Treatment is as far as possible conservative, and at one time began even before a child became a prospective worker. Not only were tooth-brushes and powder given, as they still are, to all entrants under 16 years of age, but were distributed free to the children in the four Council schools from which the majority of young workers were drawn. Brushes, powder, paste and mouth washes are also on sale to all employees at cost price. The free distribution to school children ceased with the advent of the School Dental Clinic.



THE DENTAL STAFF.

Seated (left to right), Mr. E. J. Handford, L.D.S. Eng., Mr. T. P. W. Watt, L.D.S. Edin. (Senior Works Dentist), Mr. D. St. L. Gilchrist, L.D.S. Edin., with attendants and mechanics.

When a boy or girl presents itself for treatment a chart of the mouth is made out, and any unsalvageable teeth and roots are removed under an anæsthetic—usually a “local,” but when a general anæsthetic is required the dentists take it in turn to administer one for the other.* As soon as the gums are healed, all cavities in the remaining teeth are treated and filled. The filling materials mostly in use are those classed as “plastic,” although gold and inlays (porcelain and metal) are frequently used. Healthy roots are rendered useful and aseptic by artificial crowns, and finally all fillings are polished and the teeth given a careful scaling and polishing.

The chief difficulty encountered at the outset of the Bournville Dental Scheme was the ignorance of parents with regard to the value of treatment, and, in a less degree, fear of the dentist on the part of young employees. The latter difficulty was soon overcome, tears and trepidation, after a visit or two, giving place to smiles and confidence, while the former was met by asking all parents of prospective employees under 16 to sign an authorisation for necessary treatment to be given, and making, as already stated, such treatment a condition of employment. Evidence of the progress made in the “education of the parent” is found in the fact that, when for a period the age limit for free treatment was raised not a single parent refused to sign the fresh authorisation which became necessary.

In an article on the Bournville Dental Clinic, contributed to the *British Dental Journal*,† Mr. T. P. W. Watt, L.D.S., the Senior Works Dentist, says:—

“For some time we attempted to carry out a regular six-monthly examination, and further treatment where necessary of those once treated. The scheme was quite perfect, but as time went on and larger and larger numbers came on our lists, we found that with the natural increase of ‘casuals’ and with the time taken up in examining and giving further treatment to ‘compulsory patients,’ we had no time left to take on a single fresh case. We therefore had to drop the scheme as a complete scheme, and rely on the patients’ own initiative to come up for further treatment when they desired it. *As it is, those who have once experienced the benefits of dental treatment are always on our doorstep clamouring for more.* During the eighteen months that this six-monthly examination scheme was working we found that the average number of those requiring further treatment was 64 per cent. at the end of each six months.”

* The Dentists administer general anæsthetics for the Medical Department for the minor operations which are carried out there, e.g., finger amputation, the lancing of abscesses, etc., where a short anaesthesia is required.

† October 1st, 1920, pp. 908–914.

With regard also to new entrants requiring treatment, so great is the number that on an average it is eight months before such can be given.

As soon as it is possible by increasing the number of School Clinic Dentists to ensure that all children leaving school at the age of 14 have their teeth in a sound condition, the *initial* treatment by the Works Dentist will be so greatly reduced that the period of waiting should be proportionately lessened.

During the past two years dentures have been made for any of the older employees who desired them, or who were sent by the Medical Staff as needing them from a health standpoint. As not all Approved Societies are allowing dental benefits there will probably be no diminution in this branch of our Dentists' work.

The Works Dentist, who has made detailed investigation of the systems adopted by other firms—whole-time or part-time dental officers, arrangements with private dentists for reduced fees, etc.—has reported that, so far as he could ascertain, at no other factory was a system in vogue for treating young employees and following up the treatment as is attempted here, and at the same time giving facilities for other employees to have some form of dental treatment.

AN ANALYSIS OF THREE YEARS' WORK.

	1919.	1920.	1921.
Extractions	1,735	2,951	2,783
Local Anæsthetics	1,057	1,151*	1,086
General Anæsthetics	161	337	312
Plastic Fillings	466	618	486
Gold Fillings	—	1	—
Inlays	15	6	4
Temporary Fillings	407	752*	710
Root Fillings	90	97	62
Dressings	1,252	1,651	1,705*
Scaling and Polishing	145	160	182
Dentures	20	82	251*
Dentures Repaired	14	41	106*
Crowns	9	14	10
Applicants for employment examined ...	1,780*	1,299	976
Consultations	569	929	1,030
Compulsory patients treated	914	1,136	1,293
" " finished	58	85	71
" " re-treated and finished	98	95	74
Visits to Surgery by appointment ...	1,561	2,450	3,203*
Casual Visits to Surgery	1,913	2,452	2,571
Total Visits to Surgery	5,254	6,201	6,786
Miscellaneous	426	734	1,870*

NOTE.—These figures relate to the work of two dentists, before the appointment of the third.

* Highest figure yet recorded.



DINNER TIME IN THE GIRLS' GROUNDS.
A Band Concert.

SICK BENEFIT SCHEME.

The Bournville Works Sick Benefit Scheme is a voluntary contributory fund, under the joint control of the Men's and Women's Councils, for the benefit of the firm's employees over $16\frac{1}{2}$ years* of age (with the exception of employees who are entitled to payment during their absence from work owing to sickness, and who are entitled to join the Deferred Benefit Scheme which is mentioned below). The firm contributes a sum equal to 50 per cent. of the amount expended in respect of sickness benefits and expenses of administration. Every member signs an authorisation card for contributions to be deducted from wages, the total deductions being handed over to the Treasurer each week :—

RATES OF CONTRIBUTION.

Boys and Girls, $16\frac{1}{2}$ years of age and up to 18	...	2d. per week.
Men and Women, 18 years of age and over	...	3d. „

* On page 27 reference is made to the Firm's Voluntary Scheme for employees under $16\frac{1}{2}$. This carries them over the period from the time they come under the Insurance Act (16) to the time they are eligible to draw benefit.

There is also a SUPPLEMENTAL SCHEME to which all members of the Sick Benefit Scheme may belong—contribution, 2d. per week.

BENEFITS TO SICK BENEFIT SCHEME MEMBERS.				
Women.			Men.	
Age.	1st 26 weeks.	2nd 26 weeks.	1st 26 weeks.	2nd 26 weeks.*
16½	8/-	4/-	8/-	4/-
18	12/-	6/-	12/-	6/-
22	12/-	6/-	16/-	8/-

BENEFITS UNDER THE SUPPLEMENTAL SCHEME.

Women	7/6 per week for 1st 26 weeks.*			
Men ...	10/-	„	„	26 „
Women	3/9	„	„	2nd 26 „
Men ...	5/-	„	„	26 „

Members of the Sick Benefit Scheme do not pay contributions during the period of sickness, and arrears do not count in respect thereof. Minimum time for which Sick Benefit may be claimed is three days, but should a member be away more than three days, the first three days are paid for. Benefit is not payable in respect of Sundays, but one-sixth of the benefits is payable in respect of each week-day's absence from work.

AUXILIARY BENEFIT SCHEME.

The firm have also instituted an Auxiliary Benefit Scheme under which all members of the Sick Benefit Scheme are entitled to a benefit of 5/- per week in the case of consecutive sickness over four weeks up to a total of 22 weeks beyond the first four weeks, without contributing, provided they have endeavoured to obtain benefit of at least 10/- per week in the case of men, or 7/6 per week in the case of women, from a Society registered under the Friendly Societies Act, not connected with the Works and excluding the National Health Insurance. Members unable to obtain such benefit owing to age or infirmity are entitled to participate in the benefits of the Scheme. This Scheme was instituted to encourage employees to provide for themselves during sickness, and also to ensure that they shall be entitled to some benefit from another society should they leave Bournville, as benefit under

* All these periods were increased from 13 to 26 weeks by a resolution passed at the Annual Meeting in November, 1921, which holds good for a trial period of one year from 12th September, 1921. Owing to abnormal demands on the Fund caused by the influenza epidemic, the whole question of contributions and benefits is undergoing reconsideration.

the Bournville Works Sick Benefit Scheme is only payable, at the discretion of the Committee, for a maximum period of two months after leaving the employ of the firm.

Auxiliary Benefit is not paid in cases of accident where compensation is paid under the Workmen's Compensation Act, nor where accident is sustained whilst engaged in remunerative employment outside the works.

DEFERRED BENEFIT SCHEME.

Male employees who are paid wages during sickness are entitled to become members of the Deferred Benefit Scheme on payment of 1d. per week, for which they will receive a benefit of 10/- per week for 13 weeks, dating from the time when half-pay under the Firm's Staff Wages Scheme commences.

SUPPLEMENTARY ACCIDENT ALLOWANCE.

The firm have a scheme for supplementing Accident Pay under the Workmen's Compensation Act (already referred to in this pamphlet under the heading of Accidents), and when an employee is away owing to an accident, and is in receipt of Workmen's Compensation pay as well as the Firm's Supplementary Allowance, Sick Benefit is not paid.

Where compensation under the Act is paid, but not the Supplementary Allowance, or when absence is caused by accident sustained whilst engaged in remunerative employment, other than with the firm, only half of the benefits are paid, but the allowance received must not be more than the member would receive in Workmen's Compensation, plus Supplementary Allowance. The firm do not make any contribution in respect of benefits mentioned in this paragraph.

There are very stringent rules* relative to the conduct of members, whilst in receipt of Sick Pay, for the prevention of malingering, etc.

FUNERAL BENEFIT.

Male employees are entitled to join the Funeral Benefit Scheme on payment of 1s. 3d. per annum, which entitles members to :—

£1	10	0	at death of child under 3 years of age.
£2	10	0	„ „ over 3 years and under 21.
£6	0	0	at death of wife.

* A copy of the Rules of this and all other Schemes mentioned will be forwarded to any firm interested, on application to the Publication Department, Bournville.

In addition to the above payments, the Firm at their own cost make Funeral Donations as under :—

Employees under 15 years of age	...	...	£3
„ 15 years of age and under	17	...	£4
„ 17 „ „	19	...	£5
„ 19 „ „	23	...	£6
„ 23 „ and over	...	...	£8
Funeral donation in case of wife's death	...	...	£4

EMPLOYEES UNDER $16\frac{1}{2}$ YEARS OF AGE.

The firm has a non-contributory benefit scheme for employees under $16\frac{1}{2}$ years of age (who up to this age are not entitled to benefits under the Insurance Act) which provides benefit at the rate of 7s. 6d. per week.

BENEVOLENT FUND.

Where, through illness of self or family, an employee is discovered to be in financial or other difficulty, the visitor reports the case to the Benevolent Sub-Committee. Out of a fund* provided by the Firm and the Works Council, this Sub-Committee has power to make grants in money, or in kind, e.g., invalid or special food. In some special cases assistance has been granted towards the payment of specialists' fees, fares to convalescent homes, and for surgical appliances.

Among the items dealt with during one year were:— Payment of Firm's funeral donations for fourteen male and one woman employee and ten employees' wives; fares to convalescent homes were paid for thirteen men and twenty-one women; free meals were granted to two women; assistance given for the purchase of surgical appliances in four cases, and specialists' fees paid in two; 176 general relief cases were considered, of which 128 were assisted and 48 declined.

In all such cases, of course, full consideration is given to the amount of the family income, and assistance is granted where it falls below a certain level. A special fund has, however, been created, out of which grants are made where, though the income is above scale, yet in the opinion of the Committee, real distress is involved.

Employees absent from work for a month or more are reported automatically to the Benevolent Sub-Committee, which thereupon inquires into the cases.

During absence from work owing to illness, a weekly certificate from a medical man is required. This, coupled

* This is quite distinct from the Sick Benefit Fund before mentioned.

with visits from the Works Nurse or Doctor, materially assists in preventing malingering.

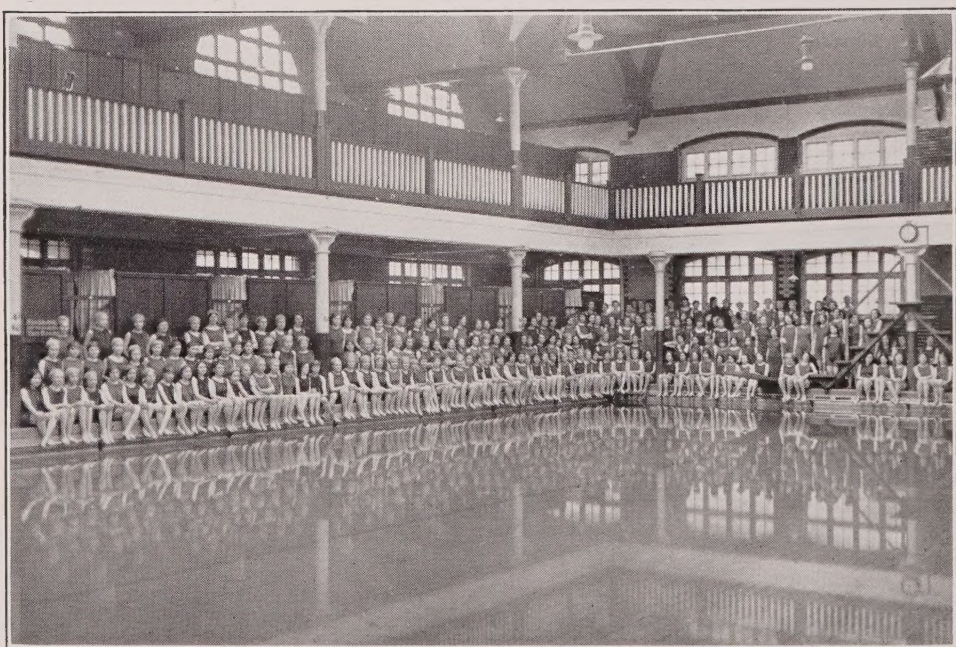
A qualified nurse (additional to those attached to the surgery) devotes her whole time to the work of the Benevolent Sub-Committee. There is also a male visitor.

OTHER BENEFITS.

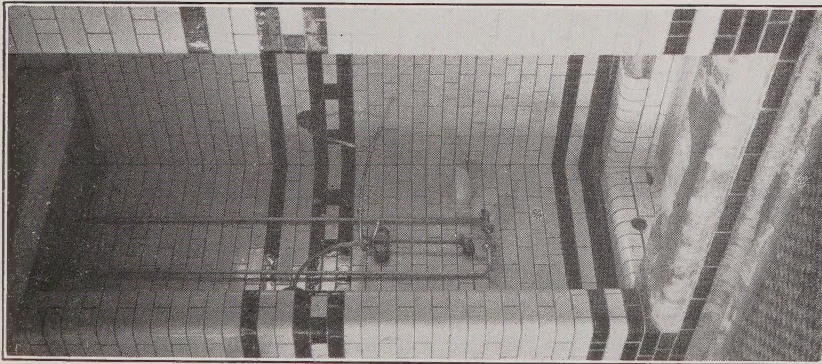
On page 31 will be found a reference to the Works Council. In order to provide for the workers' share of the administrative expenditure of this, male employees by agreement each contribute 1d. per week. The amount thus contributed being more than sufficient for the purpose, it also entitles the contributor to a Benevolent Grant of £3 at the end of a twelfth week's illness. It has recently been agreed that the balance of the fund shall be devoted, in the first place, to meeting specialists' fees. Where these exceed £1 1s. 0d. the employee pays the first guinea and the Fund the balance up to £3 3s. 0d. Women workers contribute $\frac{1}{2}$ d. per week to the Fund, and do not apply their surplus to this purpose.

PENSION FUNDS.

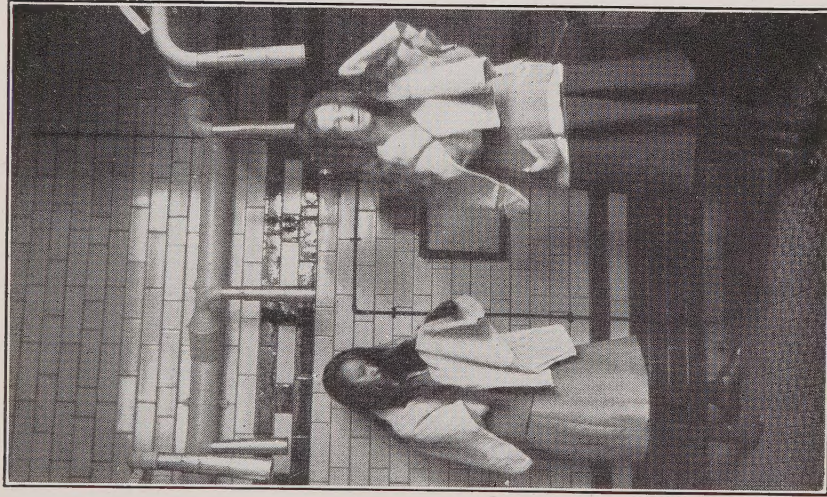
The anxiety borne by many workers in industry, caused by the prospect of loss of wage-earning capacity in old age, is perhaps scarcely realised. Consideration must therefore be given to the fact that all Bournville employees are entitled to a pension on attaining a certain age. Both



A SCENE IN THE GIRLS' BATHS.
All these girls learnt to swim in one year.



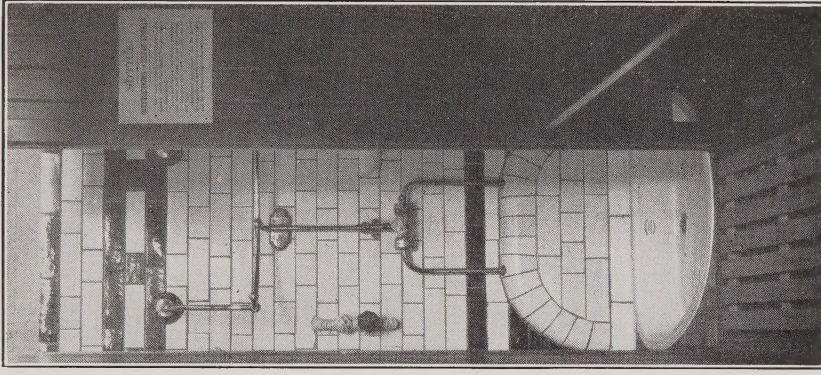
FOOT BATH.



HAIR-DRYING APPARATUS.

AT THE GIRLS' BATHS.

No one is permitted to enter the water until the Foot Bath has been used.
There is an open-air Swimming Bath in the Men's Recreation Ground.



SPRAY BATH.

Company and employees contribute to the Pension Funds. This has an indirect, but decided bearing on the question of health.

There are separate funds for men and women—the reason being, of course, that the majority of the latter leave during their twenties. The men's scheme covers the lives both of the employee and of a pensioner's widow.

OTHER SCHEMES.

Among other schemes which may be mentioned is the War Relief Committee, formed during the war to look after the interests of the wives and dependants of men with the Forces, to provide for the payment of the Pension contributions of men while on war service, to aid the widows and dependants of employees who died on service, and temporary employees in need of assistance. Pensions are still being paid to a number of widows and children, and to disabled men, together with special nourishment grants in necessitous cases. At the time of the last Report of this Committee over £88,905 had been paid out, including £61,340 to wives and dependants, and £21,582 contributed by the firm to the Pension Fund in respect of employees on service. There is also the Works Relief Committee which operates only during times of emergency, such as when distress is caused by short time.

EDUCATIONAL.

Both the Medical and Dental Departments carry out a considerable amount of propaganda work in connection with the Bournville Educational Scheme. All junior entrants pass, before commencing work, through an Initiation School, at which various aspects of employment at Bournville are explained to them. Some of the lectures are given by the Doctors and Dentists. In addition, occasional lectures are given at the Youths' Club and other Social and Educational institutions connected with the works.

Charts, dealing with the care of the teeth and other medical matters are hung in lavatories, work rooms, etc., and in order that the employee may be in no doubt as to what assistance he or she is entitled to seek, and how it is to be obtained, posters are exhibited giving the exact particulars, in very simple form, for men and girls respectively.

NOTE.—Although detailed records are kept relating to the health of the workers in this factory, it is felt that the time which has elapsed since the war is too short for these to be of any value as an index of the incidence of sickness, accidents, etc., in normal conditions of employment. Charts bearing thereon have therefore been deliberately excluded from this pamphlet.

APPENDIX.

THE WORKS COUNCILS AND HEALTH.

There are two Works Councils—Men's and Women's—which sometimes meet together, and which carry on a great deal of their work through joint standing committees. The complete organisation consists of Shop Committees, each composed of elected members of a shop with the departmental head as chairman; Group Committees, composed of representatives elected from the Shop Committees; the Works Councils themselves, composed of representatives of each group elected by the whole of the employees in that group, together with an equal number of management representatives. A Director and a worker alternately preside over the meetings.

The Works Councils take a share in safeguarding the Health and Safety of the worker through their HEALTH COMMITTEES (Men's and Women's), which are responsible for :—

BENEVOLENT FUND, through a joint sub-committee.

HOSPITAL NOTES AND DISTRESS, "HOSPITAL SATURDAY" FUND.

ACCIDENTS, through separate men's and women's sub-committees.

AMBULANCE.

DRESSING ROOMS, LAVATORIES, VENTILATION.

Here are some examples of the work it does in conjunction with the Medical and Dental Departments :—

Regular Visitation of Sick Employees extended. A grant enables sub-committee to make gifts in money or kind (this apart from the benefits received through the Sick Benefit Scheme). A large number of Hospital Notes are granted. Representation on the Birmingham Hospital Saturday Fund.

All accidents investigated, recorded, and safety measures taken.

Administration of Ambulance Work.

Extension of Dental Treatment among adult employees recommended, and in hand.

Examination of workers' hands.

Thorough inspection made of drains, lavatories and drinking-water supply.

There is also a SICK BENEFIT COMMITTEE which administers the Sick Benefit Fund (see page 24), and, through the SUGGESTION COMMITTEES, employees may make suggestions for the improvement of conditions for their own safety, comfort and welfare.

A full description of the constitution and work of the Councils will be found in a pamphlet, "A Works Council in Being," obtainable from the Publication Department, Bournville.

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PAMPHLETS ISSUED BY
THE PUBLICATION DEPARTMENT,
BOURNVILLE.

A WORKS COUNCIL IN BEING: An account of the scheme in operation at Bournville Works.

HEALTH IN THE FACTORY: An account of the work of the Medical and Dental Departments and of the Sick Benefit and other schemes in operation at Bournville Works.

THE EDUCATIONAL SCHEME AT BOURNVILLE WORKS. (*In preparation.*)

BOURNVILLE HOUSING. (*In preparation.*)

TECHNICAL SECTION.

THE GOLD COAST COCOA INDUSTRY AND ITS RECENT DEVELOPMENTS, by Edward J. Organ.

OIL FUEL: An account of its employment by Cadbury Brothers Ltd.

Publications dealing with Recreation and other phases of Industrial Organization are in contemplation; also pamphlets on various aspects of the Cocoa and Chocolate Industry.

Copies of the above may be obtained by those interested in industrial experiments on application to the Publication Department, Bournville Works.

